Online Architecture for ANNIE

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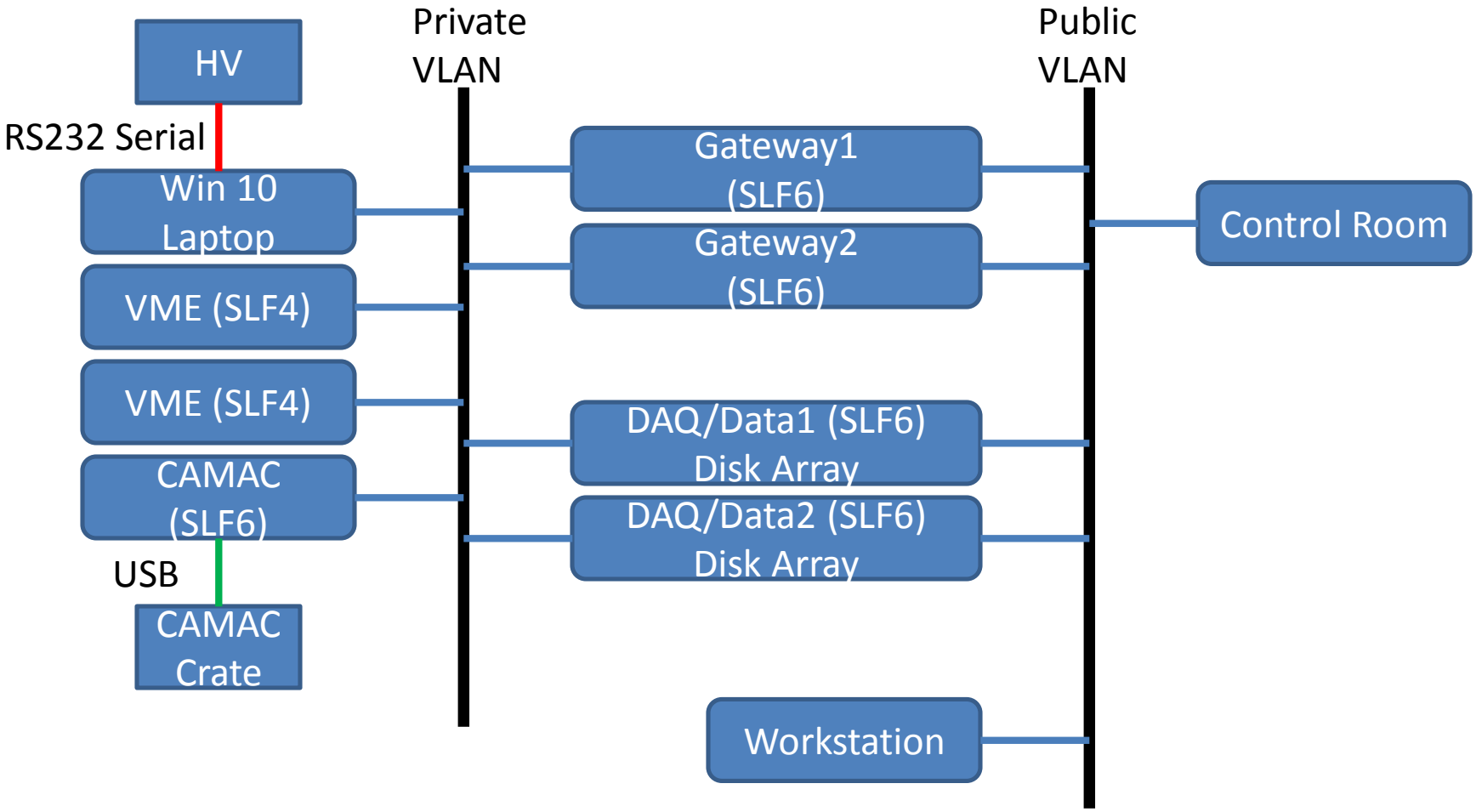
ANNIE at SciBoone



Network

- Vertical bars represent virtual local area network (vlan)
  - Not a physical network switch
  - Private vlans allows connection of systems that don't meet Fermilabs computer security base line
  - Computers meeting the Fermilab computer security baseline can be connected to the Public vlan
  - Public supports direct connections from remote computers
  - Private requires routing through a gateway computer
  - Secure connections through Secure Shell/Kerberos (SSH) or Virtual Private Network (VPN)
- Control room
  - The public network extends throughout the Fermilab site
  - Probably in ROCWest

Computers

- Scientific Linux Fermilab (SLF)
  - Scientic Linux (SL) with Fermilab configured Kerberos support
  - SLF4 does not meet the Fermilab security baseline as SLF4 is no longer supported
  - Current version is SLF6 (SLF7 is on the horizon)
- Computers
  - Unsupported Operating System (OS) – private network
    - Windows 10 computer – high voltage (Marcus/Matthew)
    - SLF4 Linux embedded processor in VME crate (Jonathan Eisch)
  - SLF6 Linux computer for CAMAC (Matt/Carrie)
    - USB to CAMAC controller (CCUSB)
  - SLF6 Linux computers (Ben, depends on DAQ requirements)
    - DAQ
    - Data storage – disk array
    - Monitoring
    - Run Control
  - SLF6 Linux computer for gateway (x2)
    - Provide access to other computers
  - SLF6 Linux workstation at SciBoone Hall
    - In case you forget to bring your laptop
- Always have a least two identical computers for each function.

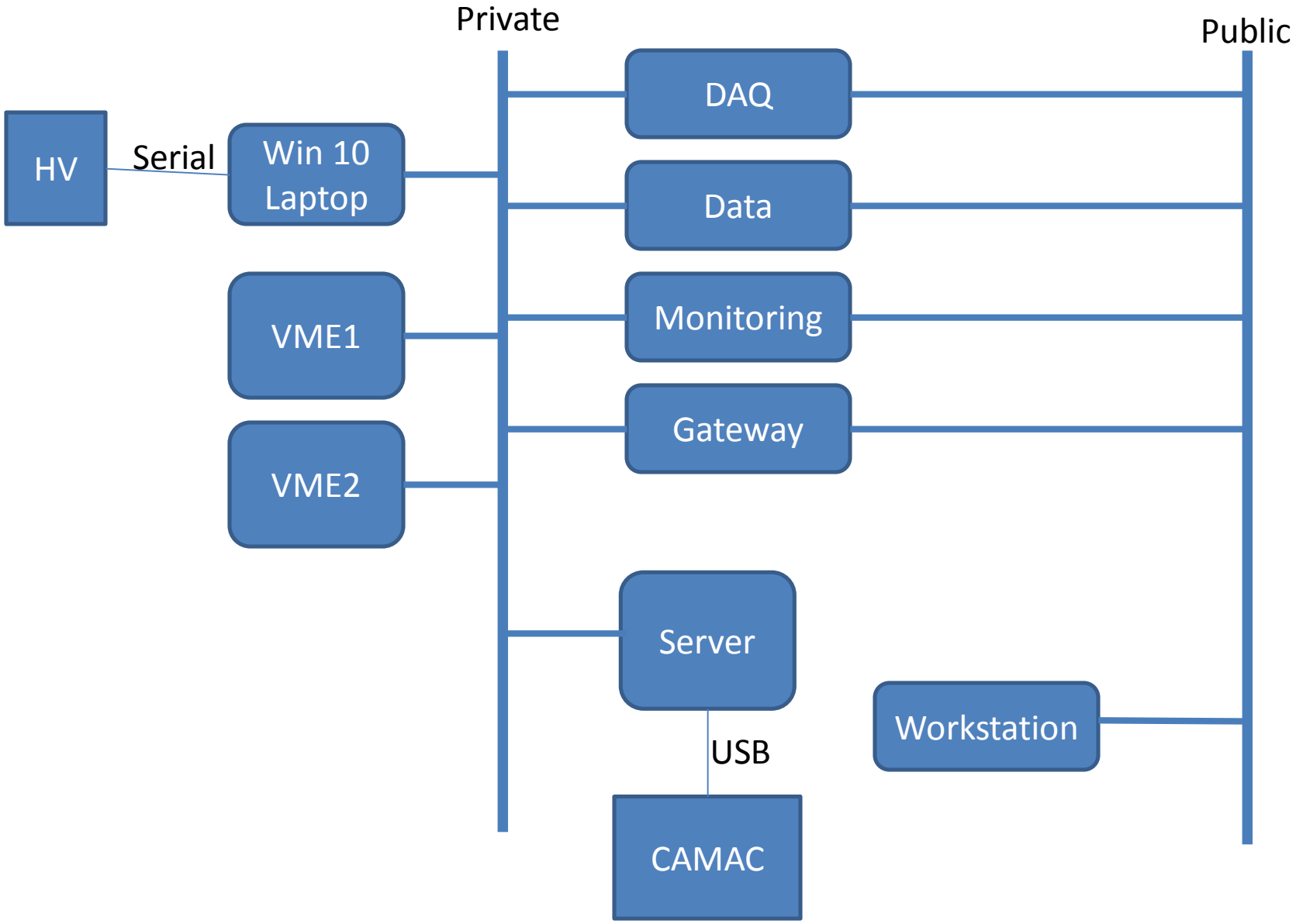
Items for Discussion

- Can the equipment in each VLAN be in different physical locations?
  - What is the performance penalty for having a VLAN span multiple switches?
- How do we handle outside access from the vme computers?
  - Developers would like to pull data from a repository onto systems in the private vlan for software updates
- We need this configuration at Dzero for testing and at SciBoone for production
- GigaBit network connections in both vlans

BACKGROUND INFORMATION

From Ben Richards (2/8/16)

- Jonathan and i sat down and worked out rough data rates for the VME before of 41Mb/s. However that's raw data and there will be a little overhead due to wrapper and things but i wouldn't have thought it was far off. The Psec4 was about 2Mb/s. Other parts eg. Camac and HV I dont know.
- [by the way it would be good if we could combine the DAQ HV and Camac into a single Framework for control and monitoring]
- I am attaching the slides for a talk i made in one of the meetings a while ago that summarised the FADC data rate (see first slide).
- However I have a couple of questions about the slides from Geoff as it will change the data rates.
  - in slide 2 there seems to be separate machines for DAQ, monitoring, Data, and Gateway. Slide 3 says SLF6 Linux computers – DAQ – Data – Monitoring Is this correct? are they intended as separate physical computers or just logical service blocks?
  - I mention this as i thought a single rack mounted server was to run the DAQ, web server, psql server, data storage and possibly gateway. If they are separate your network data rates will increase a lot as all the data to be stored has to pass from the DAQ machine to data storage as well as all the other associated communications. It also means i have to add extra parts to the code to send these messages over the network. This of course can be done, but at the moment hasn't as was going to be on a single computer.
  - From memory Matt mentioned that only a single Ethernet connection to the outside world of Fermilab. This can be expanded with a switch of course, but slide 2 seems to have the DAQ, Data, Monitoring and Gateway bridging the public and private network. I would be very happy if this was the situation however i thought the idea was to use a gateway to bridge the public and private networks?


Private
Public
HV
Serial
Win 10 Laptop
DAQ
Data
Monitoring
Gateway
VME1
VME2
Server
USB
CAMAC
Workstation